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ORIGINAL ARTICLE

Prevalence of depression and associated factors among haemodialysis patients at government and private hospitals in Addis Ababa

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ABSTRACT

Background: Depression is the most common psychiatric disorder in long-term dialysis patients and a risk factor for morbidity and mortality. Depression in haemodialysis patients has been persistently underdiagnosed and under-treated. There are negative consequences for the individual in respect of family roles, work competence, sexual function and mobility. We aimed to assess the prevalence of depression and associated factors among haemodialysis patients at government and private hospitals in Addis Ababa, Ethiopia.

Methods: A cross-sectional study was conducted from May to June 2017 at government and private hospitals in Addis Ababa. The Patient Health Questionnaire (PHQ-9) was used to assess depression and the Oslo Social Support Scale (OSLO-3) was employed to assess social support.

Results: A total of 426 patients were included. The mean age was 45.6 ± 15.0 years and 65.3% were male. The prevalence of depression was 60.3%. Factors associated with depression included being female (adjusted odds ratio (OR) 1.7; 95% CI 1.3–5.5), a diagnosis of another medical illness (OR 1.9; CI 1.1–3.0), poor social support (OR 3.7; CI 2.1–6.6), and medium income (OR 2.8; CI 1.38–5.60).

Conclusions: Depression is very common among haemodialysis patients in Ethiopia and should always be considered in their management. Being female, having poor social support, being subject to other medical illnesses and a medium level of income were risk factors for depression. Future studies should assess the adequacy of dialysis as under-treatment may contribute to the high rate of depression observed.

Keywords: Depression, end-stage renal failure, haemodialysis.

INTRODUCTION

Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Globally, it is a major public health problem which mostly manifests in later adulthood, with the lifetime risk ranging from 10–25% for women and 5–12% for men [1–3].

In patients with end-stage renal disease (ESRD), depression is the most common psychiatric illness [4], with an estimated prevalence ranging from 25–33% [5]. In patients on chronic dialysis, the suicide risk is fifteen times greater than that of the general population [6,7].

The rate of depression in dialysis patients using the Centre for Epidemiological Studies Depression Screening Index (CES-D) was 68% in the United Kingdom [8], 19–24% in Washington DC [4], and 26–38.6% in China [9]. In Canada, the estimated prevalence of depression was 39.3% in patients with ESRD [10]. The prevalence in Brazil was 42.7% [11], in Saudi Arabia 83.5% [12], Israel 43.7% [13], Serbia 49.1% [14] and 40.7% in Iran [15]. In

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Africa, the prevalence of depression among ESRD patients was 19–24% in Egypt [16] and 34% in Morocco [17].

Many factors are associated with depression in haemodialysis patients, including older age, lower haemoglobin and hospitalization [6]. Changing family roles, reduced work competence, fear of death and dependence on treatment may exacerbate feelings of loss of control and adversely affect quality of life [18].

We assessed the prevalence of depression and associated factors among patients on haemodialysis at hospitals In Addis Ababa, to provide useful data for mental health professionals, nephrologists and other staff members caring for these patients.

METHODS

A cross-sectional study was conducted from April to May 2017 in Addis Ababa, the capital of Ethiopia. The population of the city is estimated at approximately 3.1 million by the Central Statistics Agency. The participants were adult patients with ESRD receiving regular haemodialysis treatments at 11 centres in the city. Two of these are government centres and nine are privately owned. The usual schedule of dialysis treatment in stable patients comprises sessions of three to four hours, two to three times per week. The cost of treatment is borne by the patient and their families.

Face-to-face interviews were conducted and used closed-ended and open-ended questions as well as standardized questionnaires. The Patient Health Questionnaire (PHQ-9) [19] produces scores which range from 0 to 27. These can be interpreted as indicating minimal depression (score 0–4), mild depression (5–9), moderate depression (10–14), moderately severe depression (15–19) and severe depression (20–27). The Oslo Social Support Scale (OSLO-3) produces scores which range from 3 to 14 [20]. It has three classifications: poor social support (score 3–8), moderate social support (9–11) and strong social support (12–14). Data were also collected on factors such as substance use (of tobacco, alcohol, khat). After piloting, the questionnaires were modified and translated into the Amharic language so as to be understood by all participants. Training was provided to all study personnel.

Depression was diagnosed based on a score of ≥10 on the PHQ-9 depression scale. Current substance use was defined as consuming the substance at least once within the previous month. Social support was graded according to the OSLO-3 scale.

Data were coded and entered into EPI info version 3.5.3 [21], then exported to SPSS version 20 [22]. We generated descriptive statistics to describe the variables of interest and to estimate the prevalence of depression. Bivariate and multivariate logistic regressions were used to identify factors associated with depression. The strength of association was estimated using crude and adjusted odds ratios (COR and AOR) with 95% confidence intervals (CI). Variables associated with outcomes at the $p < 0.2$ level in the bivariate regression were included in multivariate regression models. Variables that were significant at the $p < 0.05$ level in the multivariate logistic regression are reported as independent factors associated with the outcome.

Ethical considerations

Ethical clearance was obtained from the Institutional Review Board of the College of Medicine and Health Sciences, University of Gondar, and from Amanuel Mental Specialized Hospital and Addis Ababa Health Bureau Ethical Review Committee. Permission was also obtained from each participating hospital.

RESULTS

Of the 435 patients eligible for the study, the response rate was 426 (98%). Table 1 summarizes the demographic characteristics of the study population. Of these participants, 278 (65%) were male. The mean age was 45.6 ± 15.0 years. Most were Orthodox Christians (52.3%) and married (53.3%). One-third had college-level education and 45.3% were unemployed.

Table 2 summarizes some clinical factors in our study population. Three-quarters had comorbid medical illness, with hypertension and diabetes the most common, and approximately 40% had been on dialysis for two or more years.

Concerning psychosocial factors, 201 (47.2%), 145 (34.0%), and 80 (18.8%) participants had poor, moderate, and strong social support, respectively. There was a history of substance use in 18 (4.5%). Of these, 12 took alcohol and 6 had a history of chewing khat.

The overall prevalence of depression was 60.3% (158 males and 99 females). There were 109 participants (25.6%) who had minimal depression, 60 (14.1%) with mild depression, 102 (23.9%) with moderate depression, 87 (20.4%) with moderately severe depression and 68 (16.0%) with severe depression. The bivariate analyses of factors associated with depression are summarized in Table 4.

Table 5 summarizes the factors associated with depression on multivariate logistic regression analysis. The odds of developing depression among patients with medium income were about three times those of patients with a

Table 1. Demographic characteristics of haemodialysis patients in Addis Ababa (n = 426).

		Frequency	%
Sex	Male	278	65.3
	Female	148	34.7
Age	18–24	39	39
	25–49	210	210
	≥50	177	177
Education level	No formal education	51	12.0
	Primary level	92	21.6
	Secondary level	140	32.9
	College/above	143	33.6
Religion	Orthodox	223	52.3
	Protestant	78	18.3
	Catholic	18	4.2
	Muslim	107	25.1
Marital status	Single	143	33.6
	Married	227	53.3
	Other*	56	13.1
Occupation	Private	76	17.8
	Government	42	9.9
	Unemployed	193	45.3
	Housewife	44	10.3
	Student	26	6.1
	Retired	45	10.6
Monthly income (Ethiopian birr**)	<735	259	60.8
	735–1176	88	20.7
	>1176	79	18.5
Residence	Rural	150	35.2
	Urban	276	64.8

*Other = widowed, separated or divorced.
** One US dollar = 28 Ethiopian birr.

Table 2. Clinical factors among haemodialysis patients in Addis Ababa (n = 426).

	Categories	Frequency	%
Comorbid medical	Yes	323	75.8
illness	No	103	24.2
Hypertension	Yes	258	60.6
	No	168	39.4
Diabetes mellitus	Yes	144	33.8
	No	282	66.2
Heart failure	Yes	17	4.0
	No	409	96.0
Epilepsy	Yes	6	1.4
	No	420	98.6
Length of time on dialysis	1–6 months	149	35.0
	7–12 months	56	13.1
	1–2 years	45	10.6
	>2 years	176	41.3
Family history of mental illness	Yes	17	4.0
	No	409	96.0

higher level of income. The odds ratio among patients with comorbid medical illness was close to 2, as was the odds ratio for females. The odds ratio among patients who had poor social support was around 4. Substance use, age, employment, marital status, religion, family history of mental illness and urban/rural residence were not independently associated with depression (Table 5).

DISCUSSION

The prevalence of depression in our study was 60.3%, about three times higher than the prevalence in the general population [3] and also much higher than that reported for dialysis patients in many other countries. However, it was lower than the prevalence reported in some studies from Saudi Arabia (83.5%) and the UK (68%) [12,8].

Regarding the associated factors, females were about twice as likely to have depression than males. This is similar to the findings in other studies [9]. Possible reasons for this might include a genetic predisposition to develop depression, hormonal factors and higher levels of stress. We found that having a medium level of income was associated with depression. Inadequate income is a common problem among patients on dialysis and may be linked to the difficulty in maintaining employment, reduced physical function and energy, and diminution of cognitive skills [4,18]. Patients who had other medical illnesses, especially hypertension and diabetes, were more likely to have depression. This is similar to findings reported from Egypt [16]. Patients who had poor social support were about four times more likely to have depression.

Our study had several limitations. A cross-sectional study design was used, and we could therefore report associations only between possible risk factors and depression, and not cause-and-effect relationships. The delivery of adequate dialysis was also not evaluated in our study. Under-dialysis

Table 4. Bivariate logistic regression of factors associated with depression among haemodialysis patients in Addis Ababa.

	Category	Depression		COR (95%CI)	p-value
		Yes	No		
Sex	Male	158	120	1	
	Female	99	49	1.5 (1.01,2.3)	0.01
Age	18–24	25	14	1	
	25–49	122	88	0.8 (0.6, 2.3)	0.42
	≥50	110	67	0.9 (0.8, 3.4)	0.44
Education	No formal	36	15	1.8 (0.9,3.6)	0.12
	Primary	58	34	1.3 (0.7,2.2)	0.25
	Secondary	82	58	1.0 (0.6,1.7)	0.31
	College/above	81	62	1	
Religion	Orthodox	144	79	1	
	Protestant	37	41	1.6 (0.4, 3.6)	0.76
	Catholic	11	7	0.1 (0.02, 2.1)	0.26
	Muslim	65	42	0.8 (0.5, 3.1)	0.33
Marital status	Married	137	90	1	
	Single	96	47	1.3 (0.9, 3.2)	0.53
	Separated/divorced/widowed	24	32	0.5 (0.3, 1.5)	0.31
Jobs	Private	36	40	1.2 (0.5,2.5)	0.26
	Government	22	20	1.9 (1.1,3.4)	0.07
	Unemployed	124	69	2.1 (0.9,4.6)	0.34
	Housewife	29	15	2.0 (0.8,5.2)	0.27
	Student	17	9	2.0 (0.9,4.3)	0.69
	Retired	29	16	1	
Monthly income (Ethiopian birr)	<735	160	99	2.1 (1.2,3.5)	0.1
	735–1176	63	25	3.3 (1.7,6.3)	0.04
	>1176	34	45	1	
Residence	Rural	90	60	1	
	Urban	176	100	1.2 (0.8, 3.4)	0.41
Comorbid illness	No	53	50	1	
	Yes	204	119	1.6 (1.3,2.5)	0.13
Hypertension	No	96	73	1	
	Yes	162	95	1.2 (0.8,1.9)	0.19
Diabetes mellitus	No	46	123	1	
	Yes	98	159	1.6 (1.0,2.5)	0.18
Length of time on dialysis	1-6 months	63	86	1	
	7-12 months	26	30	0.8 (0.4,1.5)	0.51
	1-2 years	11	34	2.2 (1.0,4.8)	0.11
	>2 years	69	107	1.1 (0.7,1.7)	0.46
Family history of mental illness	Yes	7	10	0.5 (0.2, 1.9)	0.38
	No	250	179	1	
Social support	Poor	148	53	3.2 (1.8,5.5)	0.06
	Moderate	72	73	1.1 (0.6,1.9)	0.21
	Strong	37	43	1	
Khat use	Yes	4	2	1.3 (0.8, 2.1)	0.81
	No	253	167	1	
Alcohol use	Yes	3	9	0.2 (0.1, 1.2)	0.52
	No	254	160	1	

Table 5. Multivariate analysis of factors associated with depression among haemodialysis patients in Addis Ababa.

	Category	Depression		COR (95%CI)	AOR (95%CI)	p-value
		Yes	No			
Sex	Male	158	120	1	1	
	Female	99	49	1.5 (1.01,2.3)	1.70 (1.01,2.88)*	0.03
Education	No formal	36	15	1.8 (0.9,3.6)	1.8 (0.8,3.9)	0.10
	Primary	58	34	1.3 (0.7,2.2)	1.5 (0.8,2.8)	0.21
	Secondary	82	58	1.0 (0.6,1.7)	1.3 (0.7,2.2)	0.18
	College/above	81	62	1	1	
Jobs	Private	36	40	1.2 (0.5,2.5)	1.1 (0.5,2.6)	0.19
	Government	22	20	1.9 (1.1,3.4)	1.6 (0.8,3.0)	0.12
	Unemployed	124	69	2.1 (0.9,4.6)	0.8 (0.3,2.3)	0.31
	Housewife	29	15	2.0 (0.8,5.2)	1.6 (0.6,4.6)	0.31
	Student	17	9	2.0 (0.9,4.3)	2.0 (0.8,4.6)	0.11
	Retired	29	16	1	1	
Monthly income (Birr)	<735	160	99	2.1 (1.2,3.5)	1.7 (0.9,3.2)	0.10
	735–1176	63	25	3.3 (1.7,6.3)	2.79 (1.38,5.60)*	0.02
	>1176	34	45	1	1	
Comorbid illness	No	53	50	1	1	
	Yes	204	119	1.6 (1.3,2.5)	1.87 (1.15,3.05)*	0.03
Hypertension	No	96	73	1	1	
	Yes	162	95	1.2 (0.8,1.9)	0.9 (0.4,1.8)	0.42
Diabetes mellitus	No	46	123	1	1	
	Yes	98	159	1.6 (1.0,2.5)	1.6 (0.9,2.9)	0.12
Length of time on dialysis	1-6 months	63	86	1	1	
	7-12 months	26	30	0.8 (0.4,1.5)	0.6 (0.3,1.2)	0.32
	1-2 years	11	34	2.2 (1.0,4.8)	1.8 (0.7,4.14)	0.13
	>2 years	69	107	1.1 (0.7,1.7)	1.0 (0.6,1.6)	0.33

may well have contributed to the high rate of depression we observed as treatments were funded by patients and their families. Financial constraints are likely to have resulted in fewer treatment sessions being delivered per week, and in limited access to important medications such as intravenous iron and erythropoietin.

In conclusion, there is a high prevalence of depression among Ethiopian patients with ESRD who are treated with chronic haemodialysis and it is important to consider this in the holistic management of our patients. Female patients, those with poor social support, with additional comorbid illnesses, and those with medium and lower levels of income may be at greater risk for depression. We recommend that screening for depression be integrated into the routine care of patients who present with ESRD and in those already on dialysis. Future studies should formally assess the adequacy of the dialysis delivered, as undertreatment may contribute to the high rate of depression observed.

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Participating centres/hospitals

Government centres: St Paul's Hospital Millennium Medical College and Zewditu Memorial Hospital.

Private centres: Tom Higher Clinic, Betel Hospital, St Gabriel General Hospital, Hallelujah General Hospital, Myungsung Christian Medical Hospital, Hayat Hospital, Sante Higher Clinic, Aynalem Hospital and Tsegereda Higher Clinic.

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